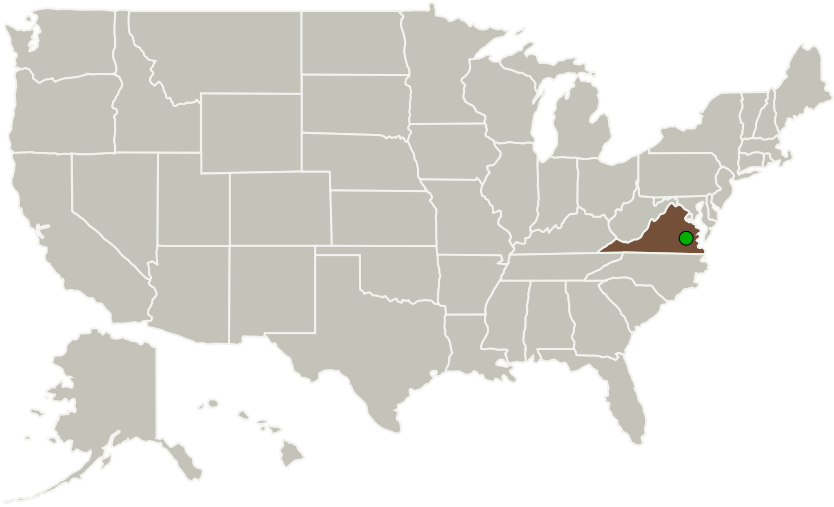
Space Station Validation of Advanced Radiation-Shielding Polymeric Materials, Phase I

Completed Technology Project (2012 - 2012)

Project Introduction

In Subtopic X11.01, NASA has identified the need to develop advanced radiation-shielding materials and systems to protect humans from the hazards of space radiation during NASA missions. The radiation components of interest include protons, alpha particles and heavy ions from galactic cosmic rays, protons and other ions from solar particle events, and high energy electrons and neutrons. International Scientific Technologies, Inc., in conjunction with the College of William and Mary, proposes to raise the technology readiness level of selected polymeric radiation-shielding materials through participation in the Materials on the International Space Station Experiment program, named MISSE-X. Phase I Technical Objectives will include assessment of the radiation environment in the orbital path of the International Space Station, selection of radiation-shielding polymeric materials for long-duration experiments in space, specification of active detectors/dosimeters for measurements of radiation in space, and design and optimization of an experiment package for inclusion on the MISSE-X platform for space-radiation environmental study. The anticipated result of the Phase I program is a proof-of-feasibility that will show the path toward a Phase II technology demonstration on board the International Space Station.

Primary U.S. Work Locations and Key Partners



Space Station Validation of Advanced Radiation-Shielding Polymeric Materials, Phase I

Table of Contents

Space Station Validation of Advanced Radiation-Shielding Polymeric Materials, Phase I

Completed Technology Project (2012 - 2012)

Organizations Performing Work	Role	Type	Location
International Scientific Technologies, Inc.	Lead Organization	Industry	Dublin, Virginia
Langley Research Center(LaRC)	Supporting Organization	NASA Center	Hampton, Virginia

Primary U.S. Work Locations
Virginia

Project Transitions

February 2012: Project Start

August 2012: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/140301)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

International Scientific Technologies, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Russell J Churchill

Co-Investigator:

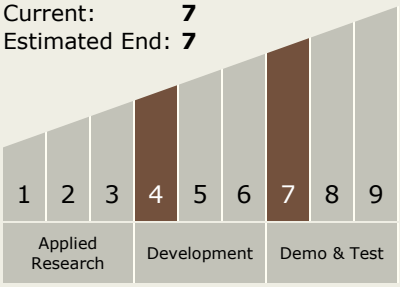
Russell Churchill

Space Station Validation of Advanced Radiation-Shielding Polymeric Materials, Phase I

Completed Technology Project (2012 - 2012)

Technology Maturity (TRL)

Start: **4**
Current: **7**
Estimated End: **7**



Technology Areas

Primary:

- TX06 Human Health, Life Support, and Habitation Systems
  - TX06.5 Radiation
    - TX06.5.3 Protection Systems

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System